SS-7300

ISO

Set using ISO screws

SONY®

SERVICE MANUAL

S-7300

TABLE OF CONTENTS

	Title	*Page*
SERVICING PRECAUTIONS		1
SECTION 1	**TECHNICAL DESCRIPTION**	
1-1.	Technical Specifications	2
1-2.	Circuit Analysis	2
SECTION 2	**DISASSEMBLY AND REPLACEMENT PROCEDURES**	
2-1.	Tools Required	3
2-2.	Hardware Identification Guide	3
2-3.	Speaker Replacement	3
2-4.	Level Control Replacement	3
2-5.	Dividing-Network Component Replacement	4
2-6.	Switch and Binding Post Replacement	4
SECTION 3	**OPERATIONAL CHECKS**	
3-1.	Test Equipment Required	5
3-2.	Overall Checks	5
SECTION 4	**REPACKING**	6
SECTION 5	**SCHEMATIC DIAGRAM AND ELECTRICAL PARTS LIST**	7
SECTION 6	**WIRING DIAGRAM**	8 ~ 9
SECTION 7	**EXPLODED VIEW**	10

SERVICING PRECAUTIONS

1. Be certain to observe the polarity of the speaker terminals when replacing any of the speakers. Note that at the input terminal lugs of the woofer and mid-range speakers there are + or - symbols marked upon them. The tweeter's positive terminal lug is painted red.
2. Firmly tighten the screws securing speakers or control panels to the cabinet to obtain an air-tight seal after replacing them.
3. When supplying continuous sine wave power to the SS-7300, keep the input power below 15 watts in normal use (FULL RANGE). In 3-channel use (SEPARATE) keep the input below 15 watts (above 4 kHz) for the tweeter, 30 watts (above 200 Hz) for the mid-range, and 50 watts for the woofer.
4. When connecting the mid-range to powerful amplifiers, connect a metallized paper capacitor or a non-polarized electrolytic capacitor of approximately 47 μF in series with the mid-range speaker to protect it from damage caused by low-frequency overload.

SECTION 1
TECHNICAL DESCRIPTION

1-1. TECHNICAL SPECIFICATIONS

Technical specifications for the SS-7300 are given in Table 1-1.

TABLE 1-1. TECHNICAL SPECIFICATIONS

System:	Completely-sealed 3-way speaker system
Speakers:	Woofer: 30 cm (12") cone type Mid-range: 12 cm (5") cone type Tweeter: 2.5 cm (1") dome type
Input impedance:	6 ohms
Overall frequency response:	50 Hz to 20 kHz
Maximum power handling capacity:	100 watts (weighted pink noise)
Crossover frequencies:	600 Hz (6 dB/oct), 4.5 kHz (12 dB/oct)
Dimensions:	390 mm (width) x 636 mm (height) x 300 mm (depth) 15 1/4" (width) x 24 3/4" (height) x 11 3/4" (depth)
Net weight:	19 kg (41 lb 5 oz)
Shipping weight:	23 kg (50 lb 10 oz)

1-2. CIRCUIT ANALYSIS

The following describes the function or operation of components and controls. Refer to the schematic diagram on page 7.

Item	*Function*
FULL RANGE Input terminals	These are the input terminals when the SS-7300 is used as a conventional three-way speaker system.
WOOFER, MID, TWEETER Input terminals	These three input terminals permit driving each speaker with a separate power amplifier.
TWEETER LEVEL and MID LEVEL Controls ATT-1, ATT-2	Controls the overall output level of the tweeter or the mid-range by ±3 dB. These controls are effective only when the speaker system operates in the FULL RANGE mode. R1 and R2 are employed to increase the LEVEL control's power handling capacity.
SELECTOR Switch S1 ~ S5	Selects either three-way (FULL RANGE position) or three-channel (SEPARATE position) operation of the speaker system. In the FULL RANGE position, input signals are routed to the LC dividing networks to drive each speaker unit. In the SEPARATE position, input signals from the WOOFER, MID RANGE and TWEETER input terminals are fed directly to each speaker unit.
High-pass filter L3, C3 (Series type)	Passes high-frequency components to the tweeter above 4.5 kHz. It cuts out the unwanted low-frequency components (4.5 kHz and lower) from the input signal (12 dB/oct below 4.5 kHz).
Bandpass filter (Parallel type)	Passes mid-frequency components (600 Hz to 4.5 kHz) to the mid-range speaker. It cuts out the unwanted high- and low-frequency components from the input signal (6 dB/oct below 600 Hz, 12 dB/oct above 4.5 kHz).
Low-pass filter (Parallel type)	Passes low-frequency components to the woofer. It cuts out the unwanted high-frequency components from the input signal (6 dB/oct above 600 Hz).
Low-cut filter	C4 eliminates low-frequency components, thereby protecting the tweeter from serious damage when using the speaker system in the SEPARATE mode.
	Capacitors employed in the LC network are non-polarized electrolytic capacitors which have low dielectric loss, thereby ensuring optimum filter response.

SECTION 2
DISASSEMBLY AND REPLACEMENT PROCEDURES

Note: Refer to the exploded view when performing the following procedures.

2-1. TOOLS REQUIRED

The following tools are required to perform disassembly and replacement procedures on the SS-7300.

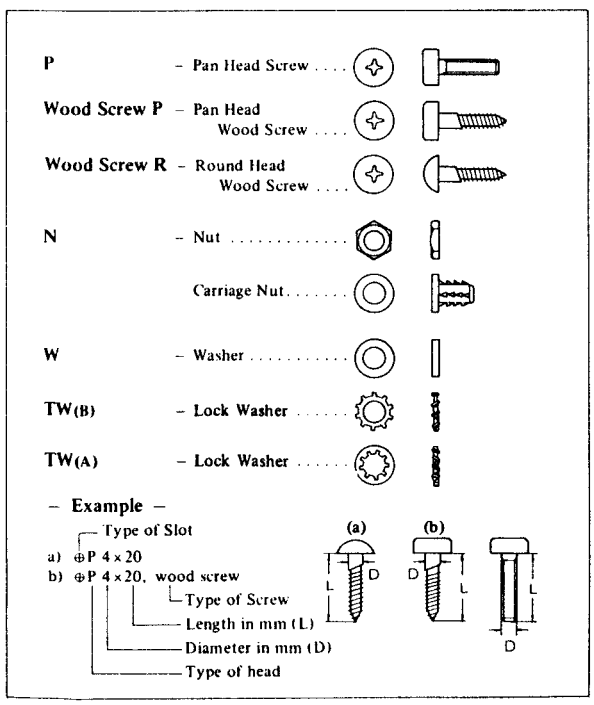
Screwdriver, Phillips-head
Adjustable wrench or combination pliers
Diagonal cutters
Soldering iron, 40 to 150W
Solder, rosin core

2-2. HARDWARE IDENTIFICATION GUIDE

The following chart will help you to decipher the hardware codes given in this service manual.

Note: Some screws in the SS-7300 are manufactured to the specifications of the International Organization for Standardization (ISO). This means that the new and old screws are not interchangeable because ISO screws have a different number of threads per mm compared to the old ones. The ISO screws have an identification mark on their heads as shown in Fig. 2-1.

– Hardware Nomenclature –



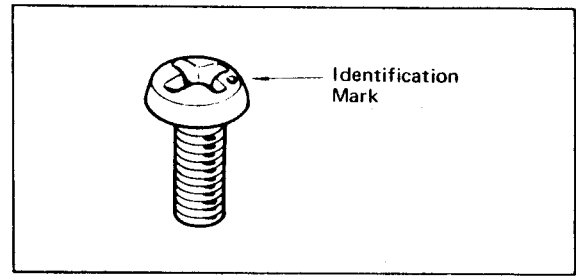


Fig. 2-1. ISO screw

2-3. SPEAKER REPLACEMENT

1. Remove the front panel by simply pulling it out.
2. Remove the screws (⊕P 4×20) securing each speaker to the cabinet.
3. Take out the defective unit and then unsolder or cut the lead wires.
4. Install the replacement speaker.

   Note: Be certain to observe the polarity of the terminals on the replacement speaker. Note that at the input terminal lugs of the woofer and mid-range speakers there are + or – symbols marked on them. The tweeter's positive terminal is painted red.

5. Firmly tighten the screws securing the speaker unit to obtain an air-tight seal.

2-4. LEVEL CONTROL REPLACEMENT

1. Remove the front panel.
2. Pull out the control knob.
3. Remove the four wood screws securing the control panel to the cabinet.
4. Remove the hex nut securing the level control to the control panel.
5. Unsolder the leads from the control, and then solder them to a new one.
6. Install the new control.
7. Reinstall the control panel.

   Note: Firmly tighten the screws securing the control panel to the cabinet to obtain an air-tight seal.

2-5. DIVIDING-NETWORK COMPONENT REPLACEMENT

Note: The dividing network components are mounted or fixed on a network mounting board which is attached to the cabinet with wood screws and glue. Therefore, the components should be replaced without taking out the mounting board.

1. Remove the woofer as described in Procedure 2-3, and then pull out the acoustic material.
2. Check and remove the defective components by cutting their lead wires. Refer to dividing network diagram on page 8.
3. Install the replacement components. Note that the coils are fixed by wood screws and rubber-based adhesives.

2-6. SWITCH AND BINDING POST REPLACEMENT

Note: The control panel containing the selector switch and the speaker binding posts is attached to the cabinet by wood screws and glue. Therefore, the switch and binding posts should be replaced without taking out the control panel.

Preparation:

Remove the woofer as described in Procedure 2-3, and then pull out the acoustic material.

SELECTOR Switch

1. Pull out the control knob and then remove the hex nut securing the switch to the panel.
2. Unsolder the lead wires from the defective switch and then solder them to the new one. Refer to the wiring diagram on page 9.

SPEAKER Binding Post

1. Remove the screw (⊕P 3x8) securing the defective binding post to the panel as shown in Fig. 2-2, and then install the replacement one.

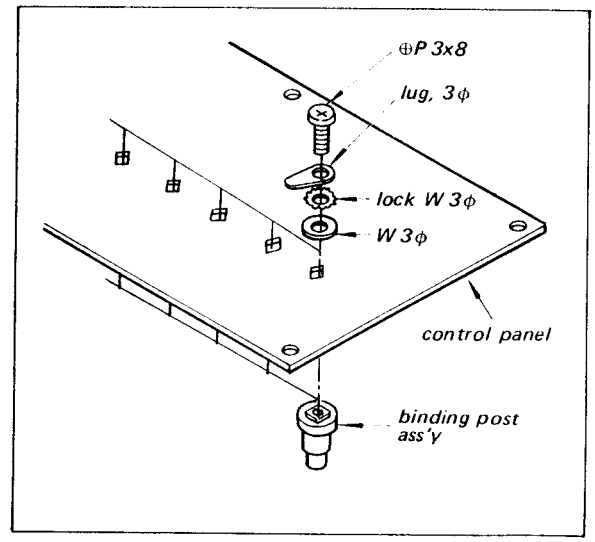


Fig. 2-2. Binding post replacement

SECTION 3
OPERATIONAL CHECKS

The procedure described here is a method of confirming that the speaker system operates properly. Always make this check after repair work.

3-1. TEST EQUIPMENT REQUIRED

1. Audio Amplifier
   Capable of supplying 3 or 4 watts continuous power to a 6-ohm load over the frequency range of 20 Hz to 20 kHz.
2. Audio Oscillator
   Frequency range: ..... 20 Hz to 20 kHz
   Distortion: ..... 0.5% or less
3. Ac VTVM
   Capable of measuring 1 to 10V
   Frequency range: ..... 20 Hz to 20 kHz
   Input impedance: ..... 20k ohms or more

3-2. OVERALL CHECKS

Preparation:

1. Set the SELECTOR switch to FULL-RANGE.
2. Adjust the audio oscillator's output to the level specified at the audio amplifier's AUX or TAPE input terminal.
3. Set the audio amplifier's controls to obtain a flat response.
4. Set the tweeter and mid-range LEVEL controls to mid-position.

Procedure:

1. With the equipment connected as shown in Fig. 3-1, feed audio signals varying from 20 Hz to 20 kHz to the amplifier while adjusting the volume control to obtain a 4 or 5-volt reading on the meter.
2. Watch and check the following items while varying the audio oscillator frequency.
   (a) 20 Hz to 100 Hz
   Confirm that the woofer does not generate mechanical noises.
   (b) 20 Hz to 300 Hz
   Confirm that no mechanical noises are caused by a resonant speaker terminal board or lead wires.
   (c) 20 Hz to 20 kHz
   Confirm that each speaker operates properly.
3. Set the oscillator's frequency to 2 kHz and then turn the MID-RANGE LEVEL control, confirming that the output level changes according to the position of the control.

   Note: Though a click noise will be heard at the instant when the level control comes to its fully clockwise position, the level control is good.
4. Set the oscillator's frequency to 7 kHz, and then check the TWEETER LEVEL control operation.
5. If some troubles are heard, turn the SELECTOR switch to SEPARATE, and then feed (in turn) a 3-watt (4 volts across input terminal) 100-Hz signal to the WOOFER, a 2-kHz signal to the MID-RANGE, and a 7-kHz signal to the TWEETER, to isolate the trouble.

CAUTION

Do not apply any signals below 2 kHz to the TWEETER.

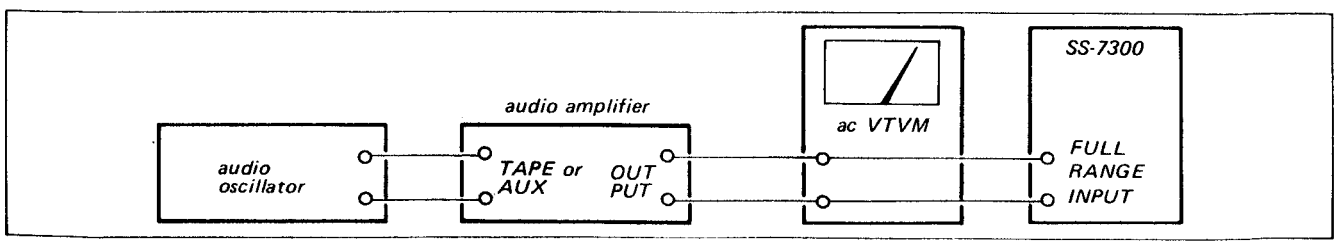


Fig. 3-1. Operational check test setup

SECTION 4
REPACKING

The SS-7300's original shipping carton and packing materials are the ideal containers for shipping the unit. However to secure the maximum protection, the SS-7300 must be repacked in these materials precisely as before. The proper repacking procedures are shown in Fig. 4-1.

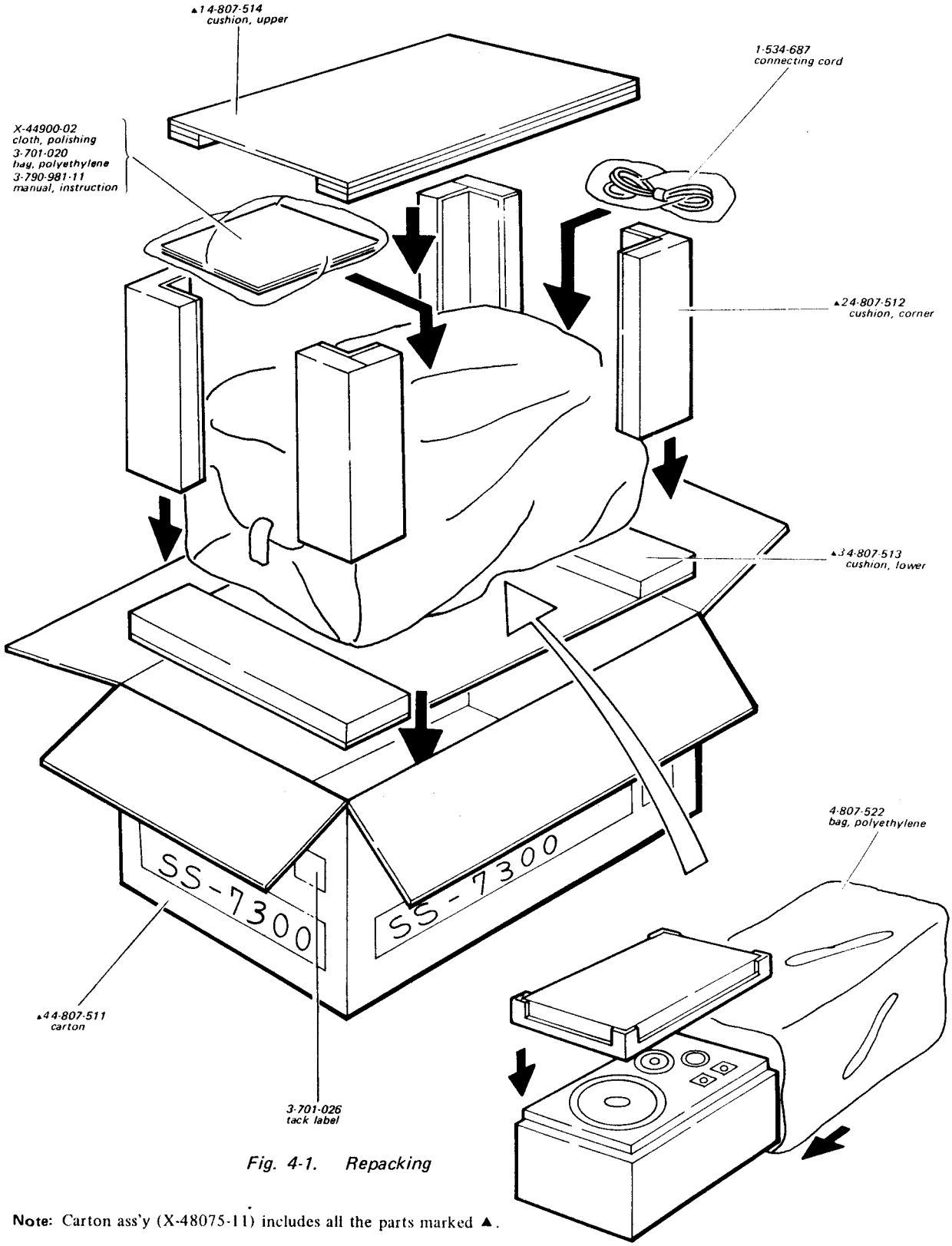
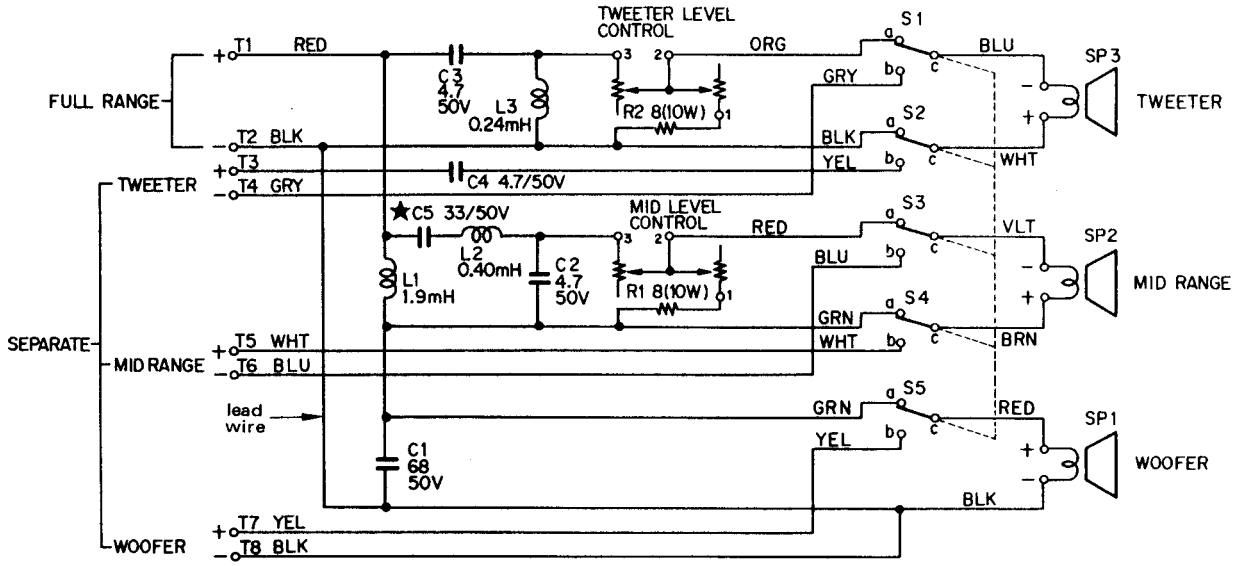


Fig. 4-1. Repacking

Note: Carton ass'y (X-48075-11) includes all the parts marked ▲.

SECTION 5
SCHEMATIC DIAGRAM AND ELECTRICAL PARTS LIST

SCHEMATIC DIAGRAM



★ Note that C5 is not employed for the sets with serial number up to 501,400.

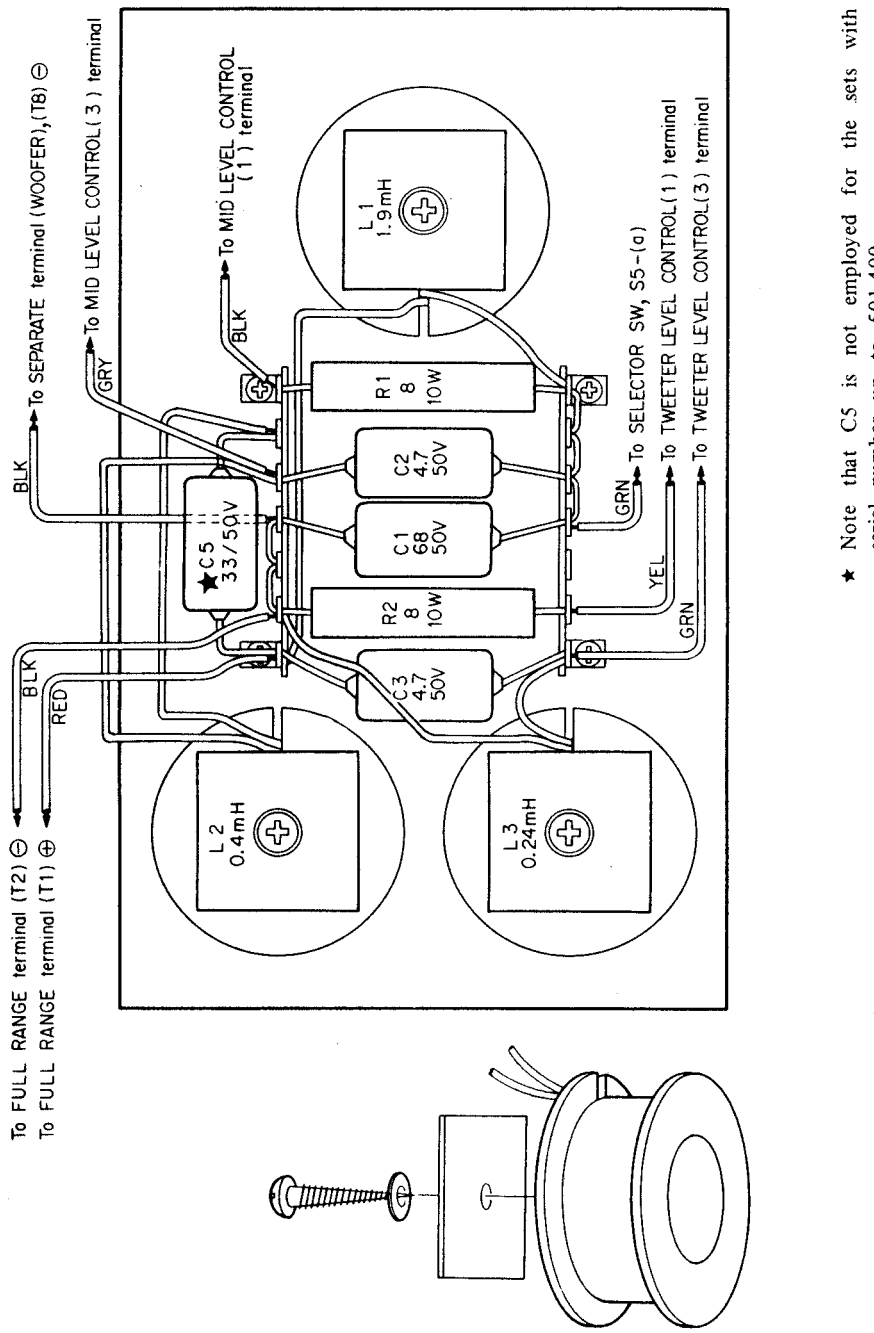
ELECTRICAL PARTS LIST

Ref. No.	*Part No.*	*Description*
	COILS	
L1	1-421-309-11	coil, 1.9 mH
L2	1-421-314-11	coil, 0.4 mH
L3	1-421-315-11	coil, 0.24 mH
	CAPACITORS	
C1	1-119-321-12	68 μF ±20% 50V electrolytic
C2	1-119-318-11	4.7 μF ±20% 50V electrolytic
C3	1-119-318-11	4.7 μF ±20% 50V electrolytic
C4	1-119-318-11	4.7 μF ±20% 50V electrolytic
★ C5	1-119-330-11	33 μF ±20% 50V electrolytic
	RESISTORS	
R1	1-207-608-11	8Ω ±10% 10V wire-wound
R2	1-207-608-11	8Ω ±10% 10V wire-wound
	SPEAKERS	
SP1	1-502-303-11	speaker unit, woofer (SD-3030W)
SP2	1-502-304-11	speaker unit, mid-range (SD-1230M)
SP3	1-502-305-11	speaker unit, tweeter (SD-6200T)
	MISCELLANEOUS	
ATT1	1-511-025-11	MID-RANGE LEVEL control
ATT2	1-511-025-11	TWEETER LEVEL control
S1	1-514-833-12	switch, rotary (function SELECTOR)
	1-534-687-11	connecting cord
	1-536-297	terminal strip, L5L

★ Note that C5 is not employed for the sets with serial number up to 501,400.

SECTION 6
WIRING DIAGRAM

DIVIDING NETWORK



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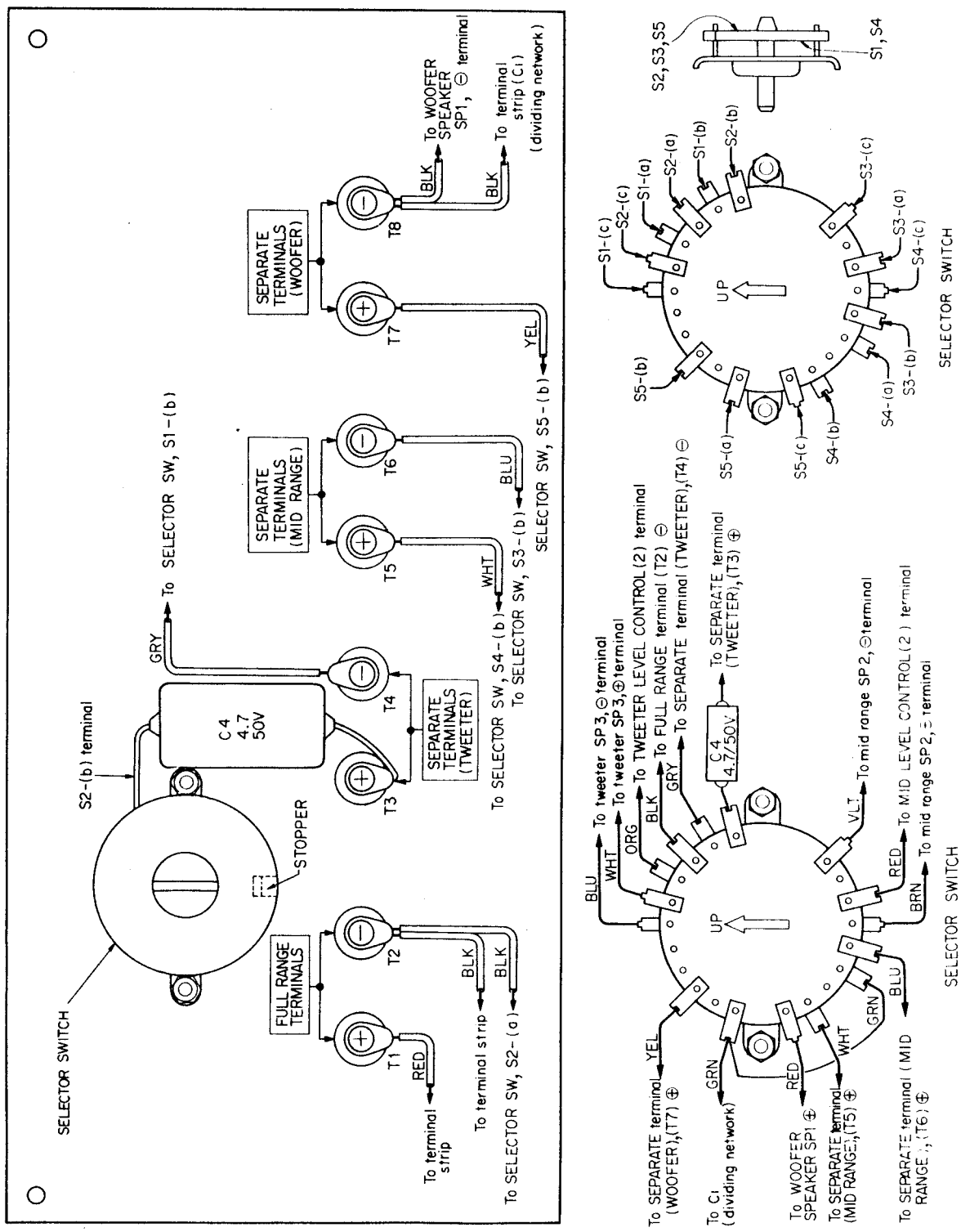
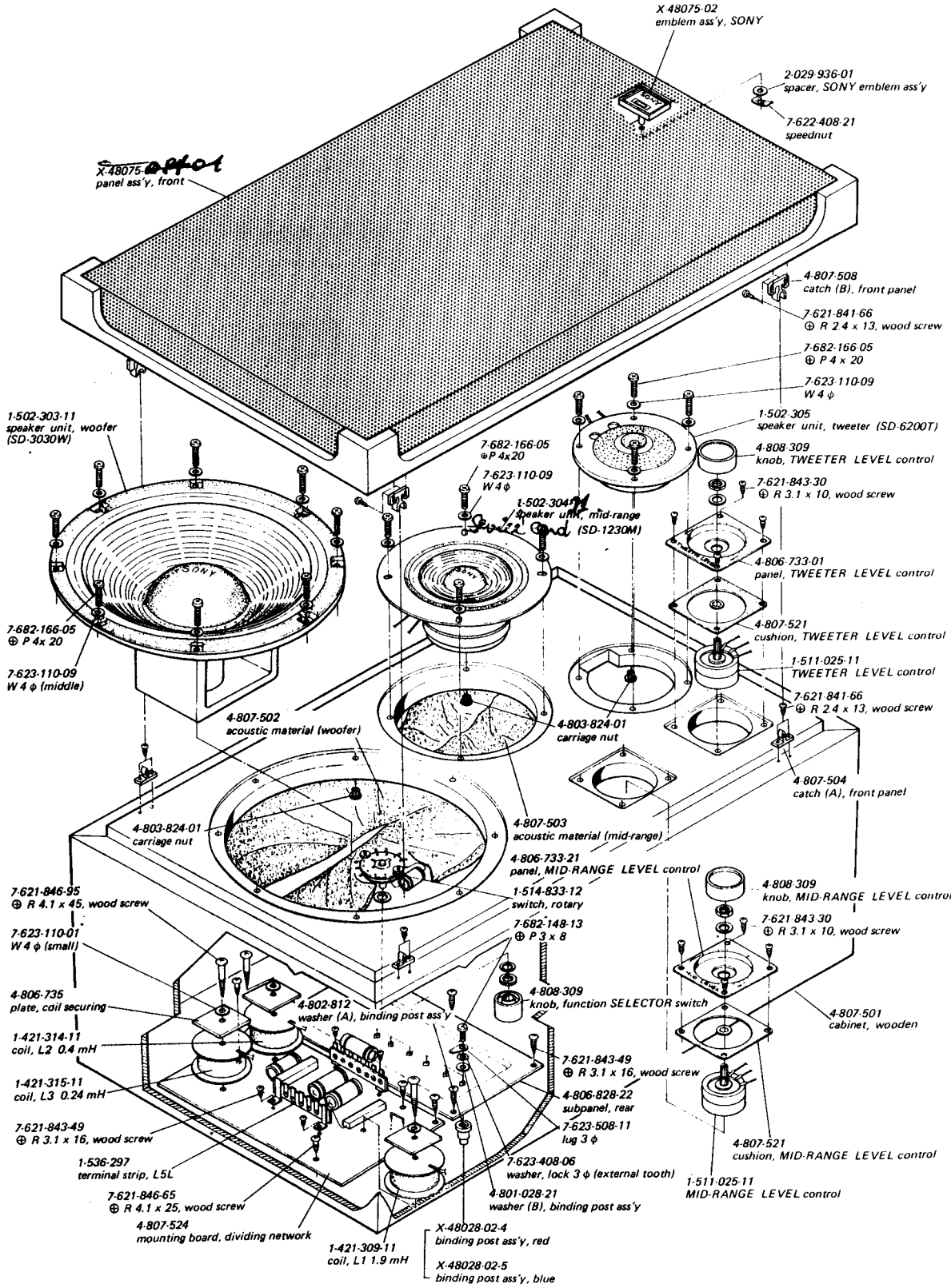
REAR PANEL


SELECTOR SWITCH
S2-(b) terminal
STOPPER
C4 4.7 50V
GRY
To SELECTOR SW, S1-(b)
FULL RANGE TERMINALS
SEPARATE TERMINALS (TWEETER)
SEPARATE TERMINALS (MID RANGE)
SEPARATE TERMINALS (WOOFER)
T1
T2
T3
T4
T5
T6
T7
T8
RED
BLK
WHT
BLU
YEL
To terminal strip
To terminal strip
To SELECTOR SW, S2-(a)
To SELECTOR SW, S4-(b)
To SELECTOR SW, S3-(b)
To SELECTOR SW, S5-(b)
To WOOFER SPEAKER SP1, ⊖ terminal
To terminal strip (C1) (dividing network)
S1-(c)
S2-(c)
S1-(a)
S2-(a)
S1-(b)
S2-(b)
S3-(c)
S3-(a)
S4-(c)
S3-(b)
S4-(a)
S4-(b)
S5-(c)
S5-(a)
S5-(b)
UP
S2, S3, S5
S1, S4
SELECTOR SWITCH
To tweeter SP3, ⊖ terminal
To tweeter SP3, ⊕ terminal
To TWEETER LEVEL CONTROL (2) terminal
To FULL RANGE terminal (T2) ⊖
To SEPARATE terminal (TWEETER), (T4) ⊖
To SEPARATE terminal (TWEETER), (T3) ⊕
C4 4.7/50V
To mid range SP2, ⊖ terminal
To MID LEVEL CONTROL (2) terminal
To mid range SP2, ⊕ terminal
To SEPARATE terminal (WOOFER), (T7) ⊕
To C1 (dividing network)
To WOOFER SPEAKER SP1 ⊕
To SEPARATE terminal (MID RANGE), (T5) ⊕
To SEPARATE terminal (MID RANGE), (T6) ⊕
ORG
BLK
GRY
VLT
RED
BRN
YEL
GRN
WHT
BLU
UP
SELECTOR SWITCH

SS-7300

SECTION 7
EXPLODED VIEW



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